Survey data collection from start to finish

Designing & executing reproducible research with an online access panel

Dr. Johanna Gereke & Joshua Hellyer (MZES)

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MZES Social Science Data Lab

Roadmap of today's talk

1. Introduction to the project
2. Timeline and milestones
3. Research design (Take the survey yourself)
4. Ethical approval
5. Pre-registration
6. Sampling and power calculation
7. Data collection
8. Analysis, results, and data sharing
9. Questions and discussion

A quick poll

Tell us about your prior experience with surveys:
`https://forms.gle/N2y2GnCRa73St3u97`

Introduction to the project

Survey data collection as part of methods course (1)

- **Course Title**: Replication and Reproduction of Experimental Social Research (MA/PhD)
  - financially supported by Junior-Fellowship der Baden-Württemberg Stiftung / Stifterverband (2019-2022) [More info]
- **Aim**: students get to know the entire scientific work process
- **Scope**: Replication of a published survey experiment involving original data collection

What students can expect (2)

During the course, students gained hands-on experience:

- Developing research (extension) ideas
- Reviewing & critiquing scholarly work
- Writing and posting pre-registration
- Learning how to apply for ethical approval
- Programming survey software
- Completing pilot tests
- Conducting data analysis
- Writing a publication-ready paper
- Completing a learning portfolio

Course design on experimental methods (3)

- Procedure
  1. First duplicate (using the same data and methods as the original study)
  2. Replicate with a new extension, i.e. collect new data with the same methods but new context
- Focus on recent experimental study on ethnic boundaries[1]
  - Extension: translating findings on ethno-racial boundaries in the U.S. to group boundaries (with/without migration background) in Germany

[1] Abascal, M. (2020). Contraction as a Response to Group Threat: Demographic Decline and Whites' Classification of People Who Are Ambiguously White. *American Sociological Review*, 85(2), 298–322. https://doi.org/10.1177/0003122420905127

Student feedback from Learning Portfolios

- ✓ "Now **I feel prepared to construct an online survey experiment myself** according to scientific standards."
- ✓ "It is also a very good experience to see how a research project in a larger team works. **It is so rewarding to see all the pieces coming together of all the work every person put into this project.**"
- ✓ "I also liked the group work since **I learned a lot from my fellow students**... like smarter coding approaches or even just new possibilities for presenting results."
- ✓ "**I think that the most important things I have learned were the practical implementations** e.g. - How to preregister a study, How to simulate power, How research funds influence the sample size"
- ✓ "I think that similar courses, which are practically oriented and organized like a small project, should be offered more often. They are **a great opportunity for students to see how working as a scientist may look like.**"

Timeline

Project Timeline

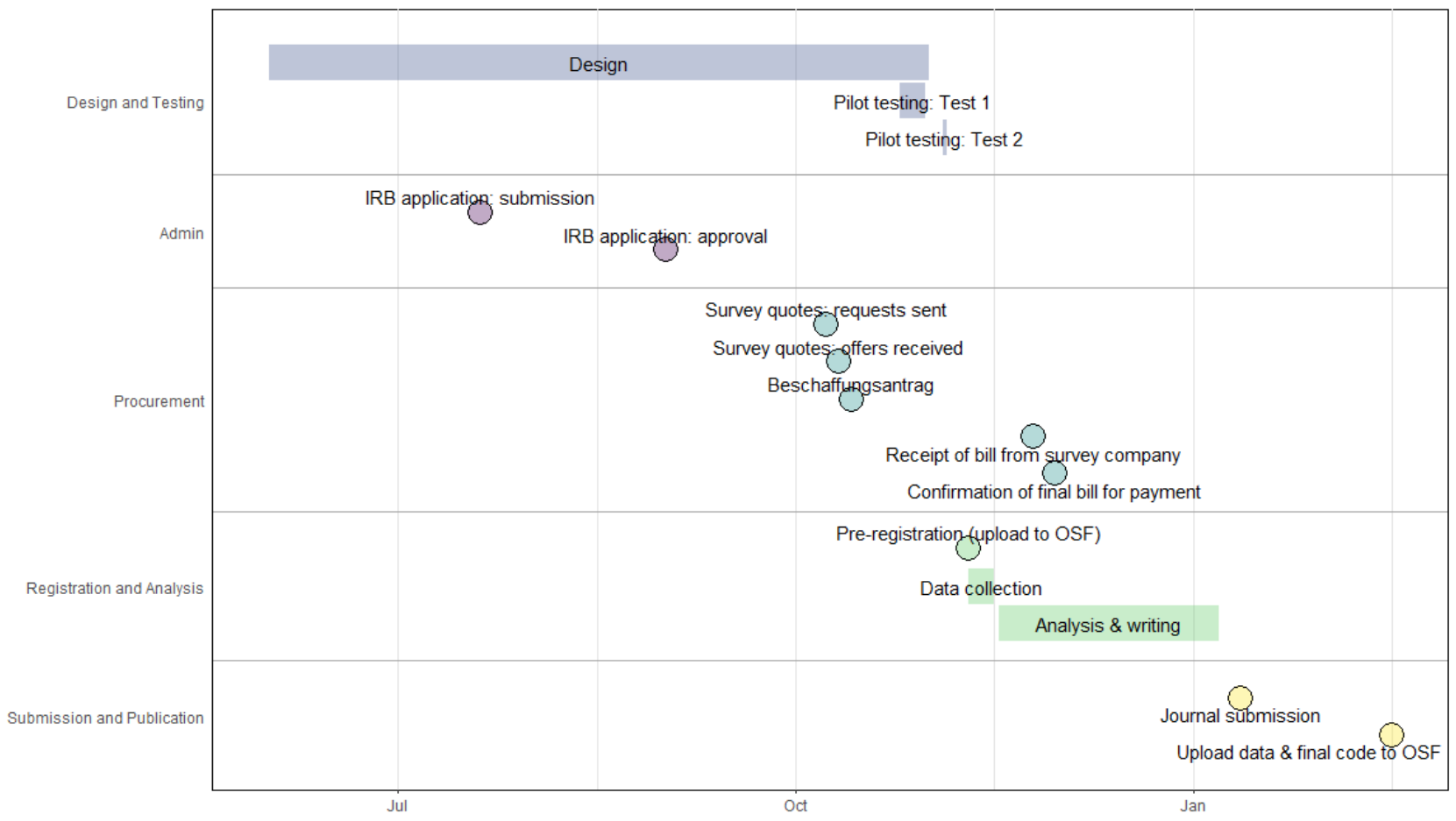
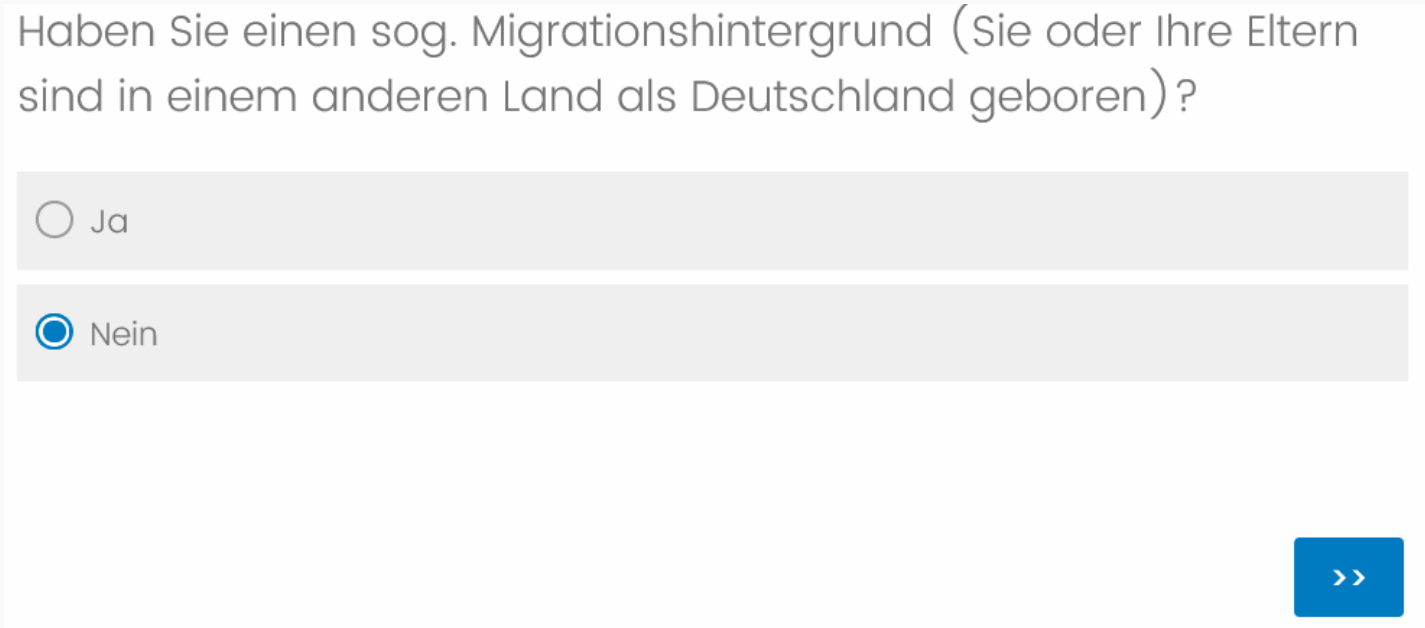


Figure 1: Graphic credit: Denis Cohen

Research Design

Take the survey

- Try the survey for yourself here (in German)
- **Note**: you must agree to participate (top option, page 1) and respond that you *do not* have a migration background (page 5) to continue

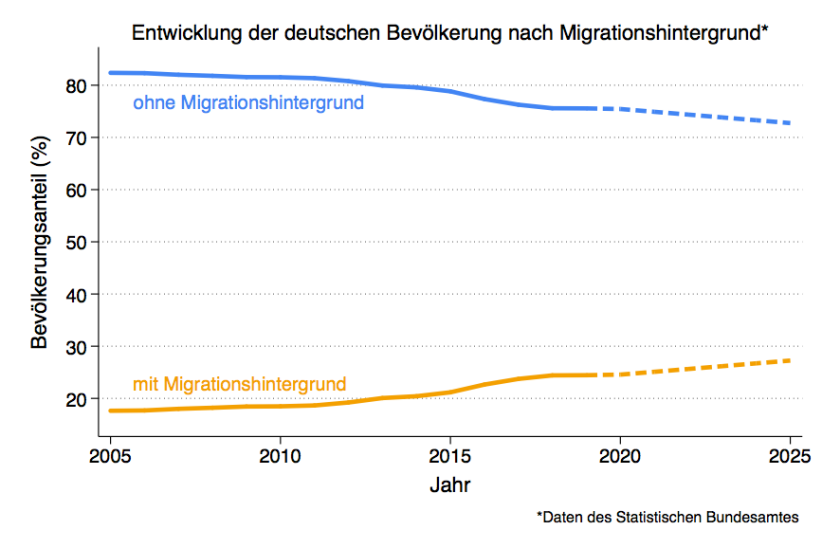


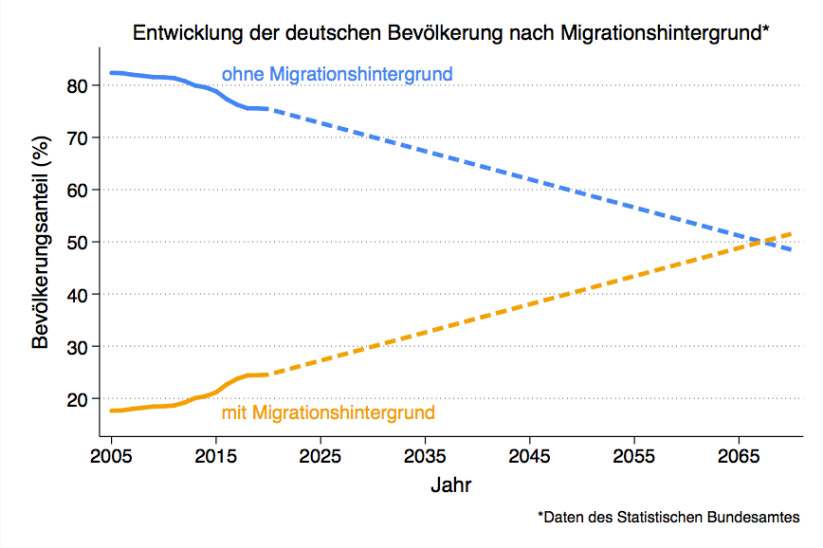
Overview

- **Hypothesis**: Germans exposed to information about demographic decline will be more likely to classify phenotypically ambiguous individuals as out-group members, reflecting a shift in group boundaries
- **Treatment**: graphs of German demographic projections showing either continued "native" majority or people with and without migration background making up equal shares of the population
- **Measurement**: ethnic classifications of 18 faces, including Germans with and without migration background

Treatment

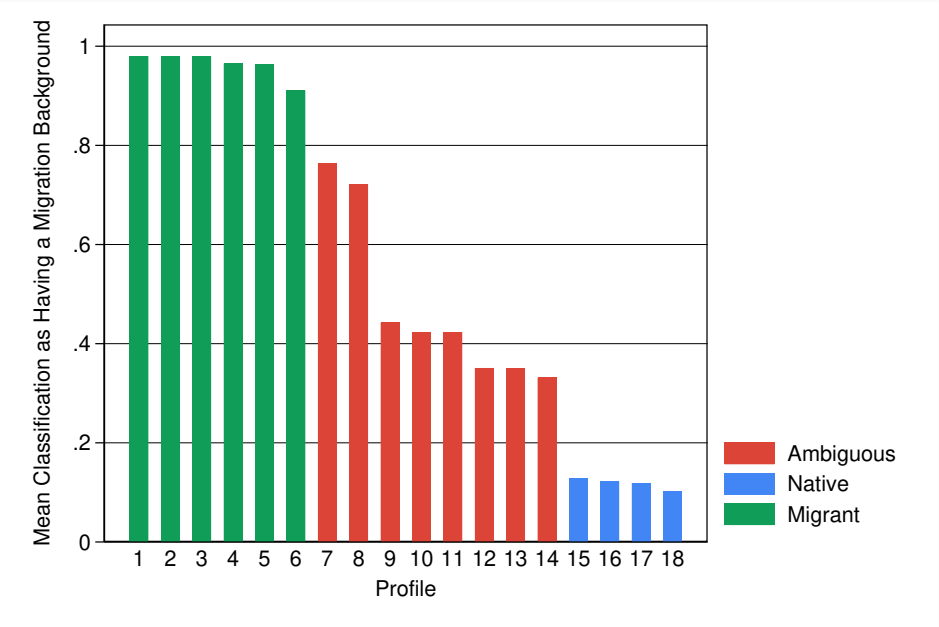
- Respondents shown either control (left) or treatment (right) graph indicating different levels of demographic threat
- Graphs based on linear projections from Destatis data, short-term (to 2025) or long-term (to 2065)
- Also includes text description, respondents must stay on page 1 minute and answer 2 comprehension questions
- Respondents debriefed at end of survey to explain manipulation





Measurements

- 18 photos of German residents from a DeZIM-Institut photo database
- Pilot testing to find photos rated consistently as migrants or natives and photos that appeared ambiguous
- Respondents are asked whether each person has a migration background (binary yes/no)



Demographics

Including a variety of demographic variables:

- Immigration attitudes
- Share of people with migration background in social network
- Educational attainment
- Region (East/West)
- Urban or rural residence

Consider order of questions carefully (avoid "order effects")

Questionnaire design

- Consult the literature for example question text
- GESIS Survey Guidelines: question wording and design of response options
- Pre-test with (non-scientist) friends and family

Ethical approval

Who needs ethical approval?

- At UniMA: ethical approval required for research on humans that:
  - **involves any personal or personally identifiable data**
  - **deceives subjects**
  - involves psychological or physical health risks
  - triggers strong emotions or asks about traumatic experiences
  - manipulates subjects' self-image
  - involves minors
  - presents risks to human dignity, life, health, and peaceful coexistence
- When in doubt, ask ethics committee staff
- More on the UniMA ethics committee website

Applying for ethics approval

- Primary concerns:
  - Potential psychological or physical harm
  - Use of deception
  - Legal ramifications
  - Personally identifiable information
  - Data protection (in accordance with GDPR)
- Focus: why risks can't be avoided and how you are mitigating them
- Include survey materials (incl. introduction, consent form, debriefing), plus details of study design and implementation (personnel, sample, timing, incentives)
- Checklist for UniMA applicants: DE / EN
- At UniMA, decision usually takes 4-6 weeks

Data protection

- What data protection laws apply to my planned data collection?
  - Interactive Virtual Assistant decision tool from BERD@NFDI (only in German so far)
  - Another resource: your university's data protection officer (Melanie Riemer at UniMA)
- Minimize collection of any personal information, restrict access to personally identifiable information and store it securely

Pre-registration

Pre-registration (1)

- What is a pre-registration?
  - Report of hypotheses, data, and planned research design written *before* data collection or analysis
- Why pre-register?
  - Prevents selective reporting and p-hacking
  - Discloses confirmatory vs. exploratory analyses
  - Helps you plan and motivate your research
- **Note**: pre-registration does not forbid you from performing exploratory analyses or making design changes!

Pre-registration (2)

- How to pre-register?
  - Various templates available on OSF
  - Make sure to post (embargoed) before beginning data collection, and ensure external verification of posting date
- Where to pre-register?
  - OSF: `https://osf.io/`
  - AsPredicted (UPenn): `https://aspredicted.org/`
- Our pre-registration on OSF
- **Note:** some repositories can create anonymized links to share during peer review, such as OSF

Sampling and power

Sampling strategy

Representative sample or targeted groups?

- Can use quotas to ensure balance on certain variable

For our study:

- Representative of "native" German population in terms of gender, age, education, employment status, region (E/W)
- Restricted to Germans without migration background [screening question]
- Quotas crossing gender x age

Power calculation (1)

Sample size should be determined by a power calculation

For our project: simulation-based power calculation

- Create large dataset by duplicating Abascal's data
- Assume true effect size equal to that reported
- Draw repeated samples and examine treatment effect in each
- For power $= 0.8$, treatment effects in 80% of samples should be significant

Power calculation (2)

Possible considerations:

- What is the smallest effect size of interest?
- What effect size do you expect based on previous research?
- What sample size can I afford, and what effect size can I attain as a result?

More details: see Lakens 2021

Data collection

Online access panels

- *Online access panel*: a pre-selected group of internet users who have agreed to take part in various surveys
- Benefits:
  - Fast data collection
  - Low cost
  - Access to a representative non-student sample
  - International data collection possible
- Drawbacks:
  - Only include internet users
  - Some users may respond carelessly to get incentives
  - Potential loss of naivete (but better than MTurk, see Chandler et al. 2019)
  - May be difficult to achieve large sample of minority groups

Collecting quotes

- Depending on university rules: need to request several quotes before hiring a survey provider (3 at UniMA)
- What to include in a request?
  - Desired sample: size (including pilot tests!), restrictions, representativeness
  - Timing: when and for how long will the survey be in the field?
  - Survey characteristics: pre-programmed or not, mobile and/or web, estimated time to complete, any special characteristics
- For our project: requested 3 quotes, received 2 and 1 company (YouGov) declined (within 3 days)

Survey companies in Germany

- **Bilendi/Respondi**: `https://www.bilendi.de/`
- **Kantar Public**: `https://www.kantarpublic.com/de`
- **YouGov**: `https://yougov.de/`
  - Restrictions: cannot program own survey
- **Prolific** (crowd-working platform): `https://www.prolific.co/`
  - Restrictions: cannot ensure nationally representative sample in DE

Not a complete list!

Procurement and contracts

- Templates for purchases above 1000 EUR (UniMA): Stabsabteilung Beschaffung
- Ask in AB-A/B secretariat for help, Contact: julia.freimuth@verwaltung.uni-mannheim.de
- >250 and <1000 EUR without sales tax: Herr Klaski (klaski@verwaltung.uni-mannheim.de)
- May need signature of MZES Director

! Exception: MTurk/Prolific studies: usually have to pay out of pocket and then ask for reimbursement (tax cannot be on entire amount but only on service fee - ask secretariat for help / past examples)

Survey programming

- Program it yourself, or leave it to the survey company?
- Platforms:
  - Qualtrics: good for surveys (no programming for simple setups, but generally not free)
  - oTree: good for behavioral games and interactive experiments (more programming needed, free and open-source)
  - EFS Survey Unipark (MZES License, often available at German unis)
- Remember that the time and attention of participants is very valuable –> create a good user experience

Qualtrics programming

- Getting started with Qualtrics surveys: overview
- Free account available for surveys with up to 100 respondents; otherwise contact IT for license information

Pilot testing

- Pilot tests to ensure that treatment works, and that photos are perceived as expected (i.e. native, migration background, ambiguous)
- Ask respondents if they had any issues with the survey
- Pilot test 1 (N = 150, 28-29 October)
  - Comprehension questions not answered correctly
  - Need more ambiguous photos (closer to 50% agreement)
- Pilot test 2 (N = 100, 4-5 November)
  - Adding text information and time restriction improved comprehension
  - Sufficient ambiguous photos found

Tip: plan for more pilot testing than you think you will need

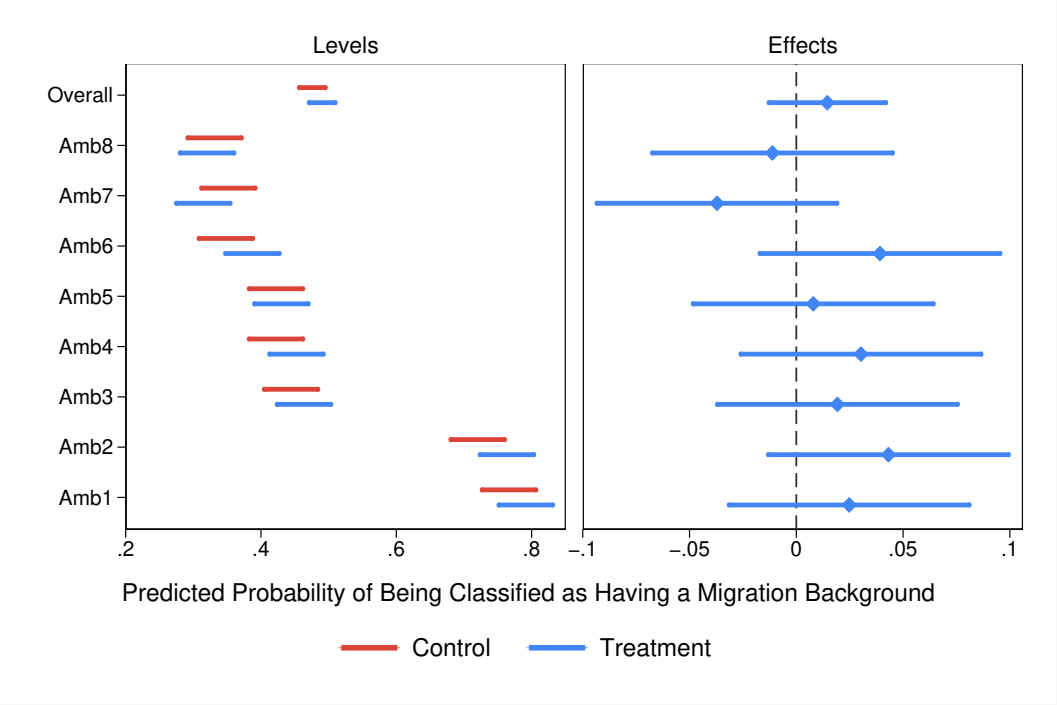
Data collection

- For our project, data collection lasted one week (N = 1102)
- Time in field depends on sample size and population: more targeted or older samples might take longer
- Be sure to clean your data carefully: check for short completion time and/or incomplete or nonsensical answers and drop respondents if needed (final N = 1077)

Sharing results and data

Results

- Our results: no significant difference in classification of (or feelings toward) ambiguous profiles between control and treatment conditions
- Conditionally accepted at *Sociological Science*, data available on OSF



Data sharing

- Why share data?
  - Fosters transparency and reproducibility
  - Opens new opportunities for collaboration
  - Generates citations
- Preparing data for sharing
  - Ensure clear coding and labeling (include codebook?)
  - Compile (and translate) questionnaires
  - Anonymize or delete any personally identifiable information
  - Guides to data preparation: ICPSR, GESIS

Code sharing

- Could another researcher reproduce your results without any additional information?
- Have multiple people test your code, ideally also someone not involved with the project
- Reference all required packages
- Future-proof when possible (i.e. "version" command in Stata)

Repositories

- What to consider when choosing a repository?
  - Ensure long-term preservation
  - Persistent identifier (URL, DOI, etc.)
  - Clear terms of use and access
  - Allow for anonymous access by reviewers (if needed)
  - Cost (the sites below are free!)
- Where to upload my files?
  - OSF: `https://osf.io/`
  - Harvard Dataverse: `https://dataverse.harvard.edu/`
  - ICPSR: `https://www.icpsr.umich.edu/web/pages/index.html`
  - SowiDataNet|datorium (GESIS): `https://data.gesis.org/sharing/`
  - UniMA MADOC: `https://madoc.bib.uni-mannheim.de/`

Resources

Books/Chapters on Survey Experiments:

- Mutz, D. C. (2011). *Population-based survey experiments*. Princeton University Press.
- Auspurg, K., & Hinz, T. (2014). *Factorial survey experiments (Vol. 175)*. Sage Publications.
- Bansak, K., Hainmueller, J., Hopkins, D., & Yamamoto, T. (2021). Conjoint Survey Experiments. In J. Druckman & D. Green (Eds.), *Advances in Experimental Political Science* (pp. 19-41). Cambridge: Cambridge University Press.
- Salganik, M. J. (2019). Bit by bit: Social research in the digital age. Princeton University Press. $\rightarrow$ surveys in the digital age (esp. non-probability sampling, linked to big data sources, gamification)

Questions?